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Docket No. 124695 / GEM-0058

REMARKS / ARGUMENTS

Status of Claims

Claims 1-17 and 21-29 are pending in the application. Claims 1-17 and 21-29 stand rejected. Applicant has amended Claims 1, 9, 15, 21 and 24, cancelled Claims 4 and 12, and added new Claims 30 and 31, leaving Claims 1-3, 5-11, 13-17, and 21-31 for consideration upon entry of the present Amendment.

Applicant respectfully submits that the rejections under 35 U.S.C. §102(e) and 35 U.S.C. §103(a) have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Rejections Under 35 U.S.C. §102(e)

Claims 1, 3, 4, 6, 7, 9, 11-15, 21, 24, 26, 27 and 29 stand rejected under 35 U.S.C. §102(e) as being anticipated by Barni. (U.S. Patent No. 6,473,634, hereinafter "Barni").

Applicant traverses these rejections for the following reasons.

Applicant respectfully submits that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, *in a single prior art reference.*" *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the *** claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, the single source must disclose all of the claimed elements "arranged as in the claim." *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

Dependent claims inherit all of the limitations of the respective parent claim.

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Regarding Independent Claim 1

Applicant has amended Claim 1 to now recite, inter alia,

"...an axial direction, the axial direction being defined by the direction of motion of a movable table for receiving the patient thereon, the method comprising: determining a target area of interest ..."

No new matter has been added by this amendment as antecedent support may be found in the application as originally filed, such as at paragraphs [0028]-[0030] and [0045], for example.

To allege anticipation of the claimed *"...processing said target area by subdividing said target area in the axial direction into multiples of an increment of the overall detector coverage in the axial direction so as to create a plurality of sub-target areas of interest..."* by Barni, the Examiner looks to col. 3, lines 51 -54 and states "...it would be anticipated and reasonable to assume that a defined direction chosen by Barni for the subdivision of the image would have been an axial direction." (emphasis added) [paper 20070323, page 4.]

Applicant respectfully disagrees that Barni anticipates Claim 1 for at least the following reasons.

First, Applicant respectfully submits that it appears that the Examiner is relying upon an assumption of the knowledge of one skilled in the art to supply claim elements that Barni fails to disclose. Applicant submits that such reliance does not support a rejection under 35 U.S.C. §102, which requires disclosure of each and every claim element arranged as claimed. Specifically, Applicant submits that Barni is absent any disclosure of the claimed *"...subdividing said target area in the axial direction..."*, and more specifically is absent disclosure of the amended claim language directed to *"the axial direction being defined by the direction of motion of a movable table for receiving the patient thereon"*.

Second, while Applicant agrees with Examiner's characterization of a pixel within the context of imaging as "the smallest chosen portion of an image, organized for processing" (emphasis added)[paper 20070323, page 3], Applicant respectfully disagrees

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that the Examiner's characterization of Barni: "...inherent within pixelation as an imaging technique is that any image which has been pixilated is ready for immediate 'sub-target area' analysis..." (emphasis added) [paper 20070323, page 3] discloses the claimed processing said target area by subdividing said target area, because the claimed target area (as well as the claimed sub-target area) are neither an image nor image data.

Applicant finds Barni to disclose "...first and second images are preferably loaded into memories 16a and 16b, respectively, as an array or matrix of image data, e.g. pixel data or voxel data..." (emphasis added) [Barni, col. 3, lines 51-54].

In comparing the disclosure of Barni with the claimed invention, Applicant respectfully submits that Barni discloses processing of image data by loading the image data into a storage memory. In stark contrast, the claimed target area (and sub-target area) are distinguished from image data as exemplified by the claimed "...obtaining scout image data responsive to said target area..." and "...operating said imaging system to create image data responsive to each said sub-target area...". Accordingly, Applicant respectfully submits that Barni is absent disclosure of the claimed "...processing said target area by subdividing said target area..."

Third, Applicant respectfully disagrees with the Examiner's assertion (on pages 2 and 3 of the present paper) that Applicant's definition of "detector coverage" lacks description of a specific size or shape. Applicant respectfully submits that paragraph [0045] of the detailed description (as referred to by the Examiner) provides specific and exemplary description of detector coverage: "...the area of interest is subdivided in the Z-axis (in this embodiment the patient table direction) into multiples of detector coverage in Z. For example, if there is 6cm of the area of interest in the Z direction, and the detector coverage in that axis is only 2cm, data is acquired with 3 consecutive locations, with each location covering 2cm". Applicant respectfully submits that one having ordinary skill in the art of medical imaging would understand from such description that "detector coverage" describes an area of coverage (detection capability) within a direction of interest. Furthermore, Applicant respectfully submits that the example provided within the detailed description would enable such person of ordinary skill in the art to recognize

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and understand the use of *detector coverage* in the claimed *subdividing the target area in the axial direction into multiples of an increment of the overall detector coverage in the axial direction*.

Furthermore, Applicant has amended Claim 1 to now claim "...processing said image data to determine a phase of said image data; synchronizing said image data; and combining said synchronized image data for each of said sub-target areas to create a set of image data of the target area of interest..."

No new matter has been added by this amendment as antecedent support may be found in the specification as originally filed, such as at Paragraph [0047] for example.

Applicant finds Barni to disclose "...at least two medical images of the same region of interest are obtained, one at a relatively higher temporal resolution (see, e.g., FIG. 2) and the other at a relatively lower temporal resolution (see, e.g., FIG. 3)...an appropriate gating technique...to achieve the first temporal resolution [of *the first image*, wherein] ...data is repeatedly captured at the same relative time...[and] corresponds to a selected phase. ...As opposed to the first temporal resolution, the second temporal resolution [of *the second image*] is low, preferably low enough to capture the blurring caused by movement of the tissue...the blurred image 202 represents the range of motion...An image combiner *superimposes the aligned first and second medical images* over one another" (emphasis and clarification added) [Barni: col. 3, lines 40-42; col. 4, lines 25-65; col. 5, lines 60-62].

Applicant submits that Barni discloses *synchronizing image data* to obtain a *first image of a target area* that includes image data corresponding to a single phase, obtaining a *second image of the same target area* that includes image data corresponding to a plurality of phases (to represent the range of motion), and *combining* (superimposing) *the first and second (and thereby unsynchronized) images (which include a plurality of phases) of the same target area*.

Applicant respectfully submits that Barni is absent the now claimed "...processing said image data to determine a phase of said image data; synchronizing

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said image data; and combining said synchronized image data for each of said sub-target areas to create a set of image data of the target area of interest...".

Stated alternatively, Applicant submits that Barni discloses a method of spatially aligning and superimposing two images of the same target area that include a plurality of temporal phases of tissue motion, which Applicant further submits is substantially different from the claimed combining synchronized image data of a plurality of different sub-target areas to create a set of image data corresponding to a larger target area of interest.

In view of all of the foregoing, Applicant submits that Barni does not disclose each and every element of the claimed invention arranged as in the claim, and absent anticipatory disclosure in Barni of each and every element of the claimed invention arranged as in the claim, Barni cannot be anticipatory.

Regarding Independent Claims 9, 15, 21, and 24

Applicant has incorporated amendments similar to those presented above in Claim 1 into Independent Claims 9, 15, 21, and 24. Applicant respectfully submits that for at least the same reasons set forth above with respect to Independent Claim 1, Barni fails to disclose each and every element of Independent Claims 9, 15, 21, and 24 arranged as claimed.

Accordingly, Applicant submits that Barni does not disclose each and every element of the claimed invention arranged as in the claim, and absent anticipatory disclosure in Barni of each and every element of the claimed invention arranged as in the claim, Barni cannot be anticipatory.

Regarding Claim 29

To allege anticipation of Claim 29, the Examiner appears to provide only a restatement of the claim language, and a remark of "2d, 3d, as per Col 3-4". Applicant respectfully submits that the above remark appears to be merely a broad, conclusory

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restatement of the claim language, absent specific recitation of where each and every element of the claimed invention may be found within Barni.

Specifically, Applicant respectfully submits that Barni is absent any disclosure of the Claimed "...wherein each increment of the multiples of an increment [of the overall detector coverage in the axial direction] are equally dimensioned..." which is specifically claimed for in the instant invention.

Accordingly, Applicant respectfully submits that a broad, conclusory restatement of the claim language without specific direction within the reference as to where each and every element arranged as claimed may be found, does not in and of itself establish a prima facie case of anticipation. Absent specific anticipatory disclosure in Barni of each and every element of the claimed invention arranged as in the claim, Barni cannot be anticipatory.

In view of the amendment and foregoing remarks, Applicant submits that Barni does not disclose each and every element of the claimed invention arranged as claimed and therefore cannot be anticipatory. Accordingly, Applicant respectfully submits that the Examiner's rejection under 35 U.S.C. §102(e) has been traversed, and requests that the Examiner reconsider and withdraw this rejection.

Rejections Under 35 U.S.C. §103(a)

Claims 2, 5, 10, 16 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barni in view of General Electric Company (European Patent Application No. 1090586, hereinafter "EP 1090586").

Claims 8, 17 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barni in view of Shao et al. (US Patent Application Publication No. 2003/0233039, hereinafter "Shao").

Claims 25 and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Barni in view of Hu et al. (US Patent No. 6,073,041, hereinafter "Hu").

Applicant traverses these rejections for the following reasons.

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In view of the secondary references being applied to reject dependent claims, and in view of Applicant's amendments set forth above with respect to the independent claims to clarify the scope of the claimed invention, Applicant submits that the secondary references fail to teach or suggest the limitations of the now amended claims, and for at least this reason Applicant submits that the combination of references applied to reject the noted claims for obviousness fail to establish a prima facie case of obviousness and therefore cannot be properly applied to reject the noted claims.

In addition to the foregoing, Applicant finds no motivation or teaching in any of the References to modify a primary Reference in view of its respective secondary Reference to arrive at the claimed arrangement of elements without disturbing the two temporal resolutions and intended purpose of the art being modified, namely Barni.

In view of the foregoing, Applicant submits that the References fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, fail to offer any reasonable expectation of success in combining the References to perform as the claimed invention performs, fail to teach a modification to prior art that does not render the prior art being modified unsatisfactory for its intended purpose, and discloses a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicant respectfully requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a), which Applicant considers to be traversed.

In light of the foregoing, Applicant respectfully submits that the Examiner's rejections under 35 U.S.C. §102(e) and 35 U.S.C. §103(a) have been traversed, and respectfully requests that the Examiner reconsider and withdraw these rejections.

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Regarding New Claims 30 and 31

Applicant has added new Claims 30 and 31, which each depend from Claim 1, to now claim originally disclosed but previously unclaimed subject matter. No new matter has been added as antecedent support may be found in the application as originally filed, such as at Paragraphs [0042], [0043], [0045], and [0047] for example.

In view of the amendment and remarks set forth above regarding the allowability of Claim 1, Applicant submits that new Claims 30 and 31 are directed to allowable subject matter and respectfully requests entry and notice of allowance thereof.

If a communication with Applicant's Attorneys would assist in advancing this case to allowance, the Examiner is cordially invited to contact the undersigned so that any such issues may be promptly resolved.

The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 07-0845.

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In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above-identified Deposit Account.

Respectfully submitted,

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